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An infinite sequence of conserved quantities for the cubic Gross-Pitaevskii hierarchy on R

We consider the (de)focusing cubic Gross-Pitaevskii (GP) hierarchy on R, which is an infinite hierarchy of coupled linear non-homogeneous PDE which appears in the derivation of the cubic nonlinear Schrodinger (NLS) equation from quantum many-particle systems. Motivated by the fact that the cubic NLS on R is an integrable equation which admits infinitely many conserved quantities, we exhibit an infinite sequence of operators which generate analogous conserved quantities for the GP hierarchy. This is joint work with Andrea Nahmod, Natasa Pavlovic, and Gigliola Staffilani.